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EMS for Children Newsletter

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Volume 10, Issue 1

Pediatric Assessment: Just Another Day at the Beach

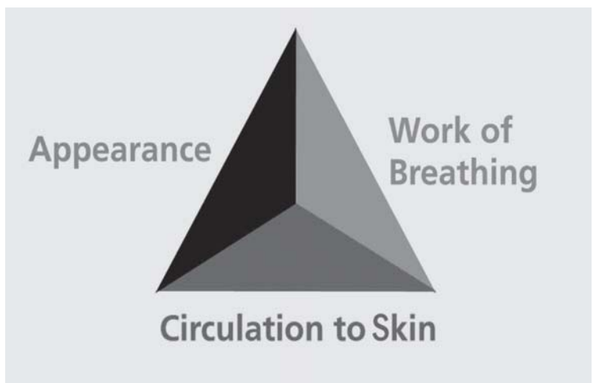
By: Dr. Alfred Sacchetti Jr.

Just imagine that you are walking out of the water at one of New Jersey's world famous beaches. You are certain that behind those dark sunglasses someone is checking you out and trying to remember just what character you played on Baywatch. Unfortunately, you are snapped back to reality by a mother's frantic call of "There's something wrong with my baby." As you identify yourself in your most authoritative voice, the crowd parts leaving a clear path for you to the mother and her child. You approach the child only to realize that the only two things you have are a wet bathing suit and a Sponge Bob Boogey Board. You have no equipment, no pulse ox, no monitor, not even a stethoscope. The situation is hopeless. Or is it? Gathering your wits you swing into action and deftly perform a brilliantly accurate pediatric assessment.

Daydreaming aside, you really don't need much more than your own senses and about 60 seconds to perform a rather complete pediatric assessment. Your first impression of a child, which is usually correct, begins as you approach the patient and can be summarized nicely in what is described as the Pediatric Assessment Triangle or PAT (figure 1).

The first side of the PAT is the child's appearance. Most children are alert and curious by their very nature. They explore their environment even if they are not too happy with what they are seeing. Children also rarely remain still. They are constantly fidgeting or flailing their arms or kicking their legs. They are miniature perpetual motion machines. However, to maintain this state of alertness and activity requires the coordination of all of a child's physiologic pathways. If any single system fails, the entire child grinds to a halt. This makes observation of a pediatric patient an ideal window into the child's metabolic status.

Figure 1 (Referenced from PEPP)



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Inside this issue:

2006
EMSC Advisory Council

Meeting Dates:
May 16, 2006
August 15, 2006
November 21, 2006

Meeting Location:
N.J. Hospital Association
760 Alexander Road
Princeton, NJ

Meeting Time:
10:00 a.m.-12:00 p.m.

EMSC
Emergency Medical Services for Children

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Pediatric Assessment: Just Another Day at the Beach

Normal infant or childhood behavior requires adequate oxygenation, balanced electrolytes, normal glucose and other in line metabolites. In addition, a blood pressure strong enough to perfuse the brain is needed along with an absence of any external stressors such as infections or toxins. As a result, a few seconds watching a child will provide a fairly reliable assessment of their clinical situation. Remember, this does not mean a child with a normal appearance cannot be sick, but it will be very unlikely for his or her physiologic functions to be far off baseline.

A more formal assessment of a child's appearance can be accomplished with the mnemonic TICLS (pronounced "tickles") summarized below.

Tone - Is there vigorous movement with good muscle tone, or is the child limp?
Interactivity - Is the child alert and attentive to surroundings, or apathetic?
Will the child reach for a toy?
Does the child respond to people, objects, and sounds?
Consolability - Does comforting the child alleviate agitation and crying?
Look/Gaze - Do the child's eyes follow your movement, or is there a vacant gaze?
Speech/Cry - Are vocalizations strong, or are they weak, muffled, or hoarse?

Most providers agree it is the "Look or Gaze" which provides the most information. If any of the child's physiologic functions are amiss, the child will develop a blank, unfocused stare that is a red flag for something serious. Obviously, a completely unresponsive child is the extreme of baseline dysfunction.

The next side of the PAT is breathing. Again, just watching and listening will provide all the information needed. Most children will have an easy relaxed respiratory motion. As the respiratory rate increases, it becomes more difficult for the child to maintain this comfortable rhythm. More work is required to move the air in and out of the lungs at a faster pace and the child will develop retractions and nasal flaring. Retractions may appear between the ribs (intercostals), in the upper abdomen (sub-zyphoid), and in the upper chest (suprasternal). A child with retractions who is working hard to breath may be in distress and at risk of tiring but is still generally considered to be breathing. A much more ominous finding would be a child with very shallow or no respirations. Such a child will need immediate intervention in the form of rescue breathing.

At the same time as you watch the child's respiratory activity, you can also listen to the child's breathing. Is the child's breathing noisy or not? Children may have wheezes, ronchi, rales, stridor or any number of findings on a lung exam. Any of these sounds are the result of turbulent airflow or excess secretions in the lungs. It really doesn't matter what is making the noise, or what the particular noise is, all that matters in your initial assessment is that the child's breathing is abnormal. In fact, the noisier the breathing the better. It requires good air flow to make a really noisy child. It also makes it very convenient to monitor the child. As long as they sound terrible, you know they are breathing and moving air well. Just as with the observation of a child's breathing, a silent child may imply very poor air flow and should be considered a red flag.

A specific respiratory rate does not need to be counted and, in fact, can be quite time consuming in even the most cooperative child. For the Pediatric Assessment Triangle, all that is required is an observation that the child looks to be breathing easily, or is working hard to breath or has abnormally slow or absent respirations.

It should be noted that any breathing assessment assumes an open airway. An awake child with an obstructed airway will be evident by respiratory efforts with no chest motion or air exchange. An unresponsive child with an obstructed airway will generally be apneic and the obstruction will become obvious when the airway is opened to begin rescue breathing.

Post Test Continued

Pediatric Assessment: Just Another Day at the Beach

7. A readily palpated pulse, generally indicates a
   a. Poor blood pressure
   b. Good heart rhythm
   c. Early sign of shock
   d. Good blood pressure

8. The pediatric assessment in this article is designed to
   a. Allow for longer on scene treatment
   b. Minimize field time
   c. Facilitate transfer
   d. Both b and c

9. You should use the overall appearance of a child, not a single finding to determine a patient's status.
   a. True
   b. False

10. Using the Pediatric Assessment Triangle, how long should it take to do the exam?
    a. 30 seconds
    b. 60 seconds
    c. 90 seconds
    d. 120 seconds

Pediatric Assessment: Just Another Day at the Beach
Answer Sheet - Course # 06992264
1.0 Elective CEUs for NJ EMT-Bs with a score of 70%

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B
10. A B C D

Please Print Clearly

Name:_____ Address:_____
NJID#:_____ Town:_____
State:___Zip Code:_____
Phone Number:_____
E-Mail:_____

Complete and return the answer sheet only to:
OEMS
Attention EMSC
P.O. Box 360
Trenton, NJ 08625-0360

Post Test

Pediatric Assessment: Just Another Day at the Beach

1. Your first impression of a child should begin
   a. When you are talking with the patient's mother.
   b. While you are approaching the patient.
   c. After finding out the patient's history.
   d. All of the above.

2. What does "PAT" mean?
   a. Patient with Advanced Trauma
   b. Place Airway Through
   c. Pediatric Airway Treatment
   d. Pediatric Assessment Triangle

3. What are the three sides of the triangle?
   a. History, Medications, Allergies
   b. Skin Temperature, Pulse, Airway
   c. Appearance, Work of Breathing, Circulation to Skin
   d. Level of Consciousness, Appearance, Pulse

4. What does "TICLS" mean?
   a. Ten Individual Clear Little Signs
   b. Truly Infected Chests Leave Signs
   c. Tone, Interactivity, Consolability, Look/Gaze, Speech/Cry
   d. Tone, Interest, Consolablitiy, Look, Speech/Cry

5. What is the most consistent and easily found artery?
   a. Carotid
   b. Brachial
   c. Radial
   d. Femoral

6. What can cause delayed capillary refill in a healthy child?
   a. Crying
   b. Just getting out of the bath
   c. Cold weather
   d. None of the above

Continued from page 2

Pediatric Assessment: Just Another Day at the Beach

Finally, the circulation of the child needs to be evaluated. Again this is mostly a visual process which can be accomplished within seconds of approaching the child. At normal temperatures, a child will have a uniform color with good blood flow to the skin. Even with dark skinned races, infants and young children will still have an even hue to their skin. As a child becomes more ill and their circulation begins to fail, their body will begin to shunt blood away from their skin to preferentially perfuse more essential organs.

Other skin appearances can also be seen. Generalized cyanosis may be seen with severe hypoxia, a vivid red appearance is often seen with some viral or streptococcal infections, while a grey hue can be seen in certain shock states. In dark skinned children, the palms, nail beds, soles of the feet and lips can be used to search for abnormal colorations.

If you touch such a child, the skin will blanch but slowly regain its color. Some clinicians prefer to use the nail beds to perform this evaluation. Unfortunately, this capillary refill test is very dependent upon ambient temperatures and will frequently be delayed in cold weather even in healthy children.

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EMSC Materials Available

The following EMSC Program materials can be requested free of charge.

- **Pediatric Assessment Ambulance Poster** Self-Stick: 8½" x 11" (2005)
- **Emergency Care in the School Poster** 11" x 17" for school nurses (2006)
- **Basic Emergency Lifesaving Skills (BELS)**–A booklet outlining the framework for teaching emergency lifesaving skills to children and adolescents–US Department of Health & Human Services–Maternal & Child Health Bureau (1999)
- **Resource Manual for the Nurse in the School Setting-** Includes Emergency Care Protocols, recommended care supplies and multiple assessment resources. (Reproduced with the permission of Illinois EMSC program.) (2003)

Fax or E-Mail your name, address, facility name, and email address to:

State of New Jersey
Department of Health & Senior Services
Office of Emergency Medical Services
Fax 609-633-7954
E-Mail emsc@doh.state.nj.us

When faxing your request, please type or print it on a separate piece of paper.
Please do not fax the newsletter to us with your request. Faxed newsletters are not legible.
Please provide all information to ensure a prompt response to your request.
Thanks!

Continued from page 3

Pediatric Assessment: Just Another Day at the Beach

While you are touching the child, you might as well finish your exam of the circulation. Children normally have warm dry skin. A child who is cool or clammy to the touch is one who is under significant stress. You can also feel for the child's pulse at this time. Everyone has their favorite artery to palpate, but the most consistent and easily found seems to be the brachial artery. A readily palpated pulse, generally, indicates a good blood pressure while a thready, difficult to detect pulse should raise an immediate concern for the child's perfusion status. As with the respiratory rate, it is not necessary to actually count and determine the heart rate for the initial PAT assessment. Simply noting a strong pulse is present and that it is not slow is all that is needed at this time. A more formal counted heart rate can always be obtained later.

By now you've gotten the idea the pediatric assessment is a rapidly performed process that is designed to minimize field time and facilitate transfer. One question can be raised, just how good of an assessment can you get from the PAT? The answer to that depends on what you want to do with the assessment. If you are trying to determine whether to admit a child to the ICU, then a formal set of vital signs among other objective measurement will be needed. However, to determine the initial status of a child in the pre-hospital setting requires little more than the pediatric assessment triangle. To prove the point, the Pediatric CUPS Assessment (figure 2) was developed using only the criteria of the PAT. This assessment system demonstrates just how effective a 60-second pediatric evaluation can be.

What happened to the child in distress on the beach? Well, as you perform your PAT you observe a bright alert curious 15-month old child staring at you because you have the same boogey board as his 3- year old sister. His respirations are easy, there are no retractions and his skin is a very slight red as seen though a thick layer of SPF 45. However, his lips are deep blue which convinced his mother he was cyanotic and approaching impending respiratory failure. You explain to the mother that the overall appearance of the child must be used in determining his status, not just a single finding and assure her his overall PAT is one of a stable healthy little boy. Then you smile knowingly as you and the mother watch his sister walk over and offer her brother another lick of her "BooBerry" freeze pop. The mother breathes a sigh of relief, tells you she will never forget you while the crowd of onlookers chuckle gleefully and offers you a round of applause. Oh, and those eyes behind the dark sunglasses, that's the subject of a newsletter from a different clinical service altogether.

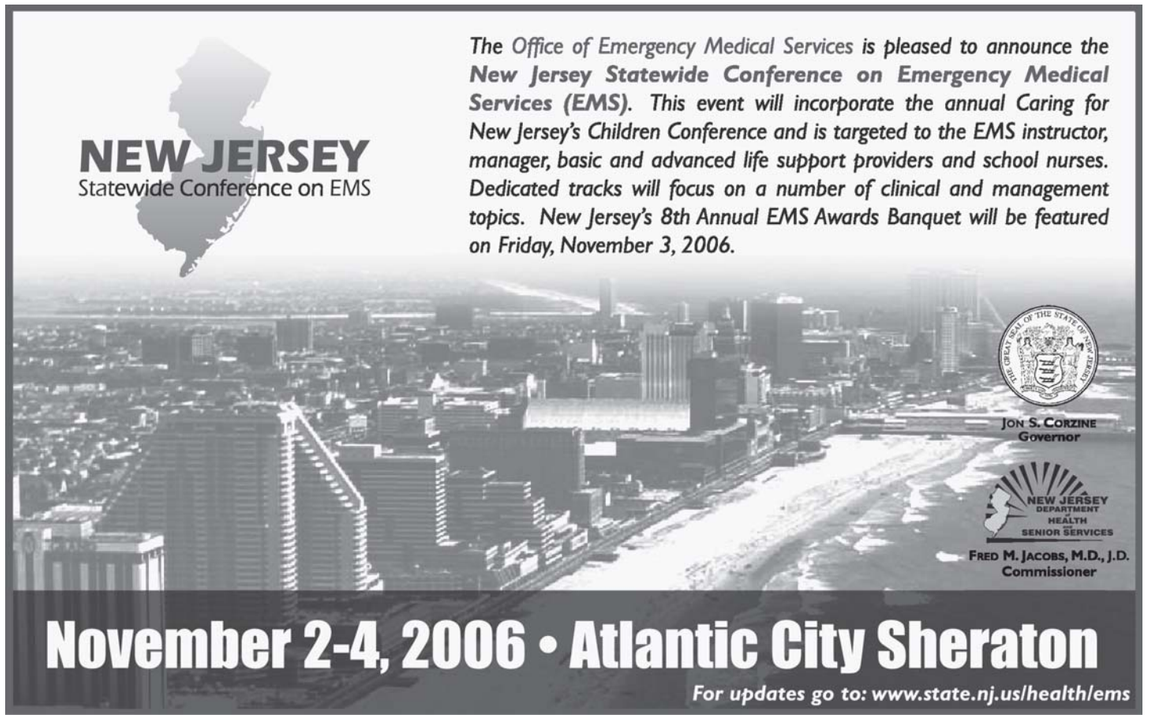
Figure 2

Category	Assessment	Actions
Critical	Absent airway, breathing, or circulation	Perform rapid initial interventions and transport simultaneously; reassess frequently
Unstable	Compromised airway, breathing, or circulation with altered mental status	Perform rapid initial interventions and transport simultaneously; reassess frequently
Potentially unstable	Normal airway, breathing, circulation, and mental status BUT significant mechanism of injury or illness	Perform initial assessment with interventions; transport promptly; perform focused history and physical exam during transport, if time allows
Stable	Normal airway, breathing, circulation, and mental status; no significant mechanism of injury or illness	Perform initial assessment with interventions; perform focused history and detailed physical exam; routine transport

2nd Annual New Jersey Statewide EMS Conference

We are very excited about this year's conference, as we will be combining the 7th Caring for New Jersey's Children Conference with the New Jersey Statewide Conference on EMS. This year's conference will be November 2nd-4th, 2006 at the Sheraton Hotel in Atlantic City. This is a great way to earn CEUs. One of the highlights of this year's conference will be the New Jersey EMS Awards Dinner on Friday evening. When you receive your registration packet, don't hesitate as classes fill quickly. We hope to see you and a friend there!

Additional information is available at www.state.nj.us/health/ems.



EMSC Going Electronic

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The EMSC newsletter is also available at: www.state.nj.us/health/ems/newsletters.htm

To report child abuse or neglect in New Jersey:
call 1-877-NJ ABUSE
(1-877-652-2873)
24 hours/day, 7 days/week
Make the Call;Save a Child

Numbers to Remember

New Jersey Poison Information and Education System
1-800-222-1222